Lessons Learned from Assessing Ecosystem Restoration Studies across the Nation

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Recent Quotes

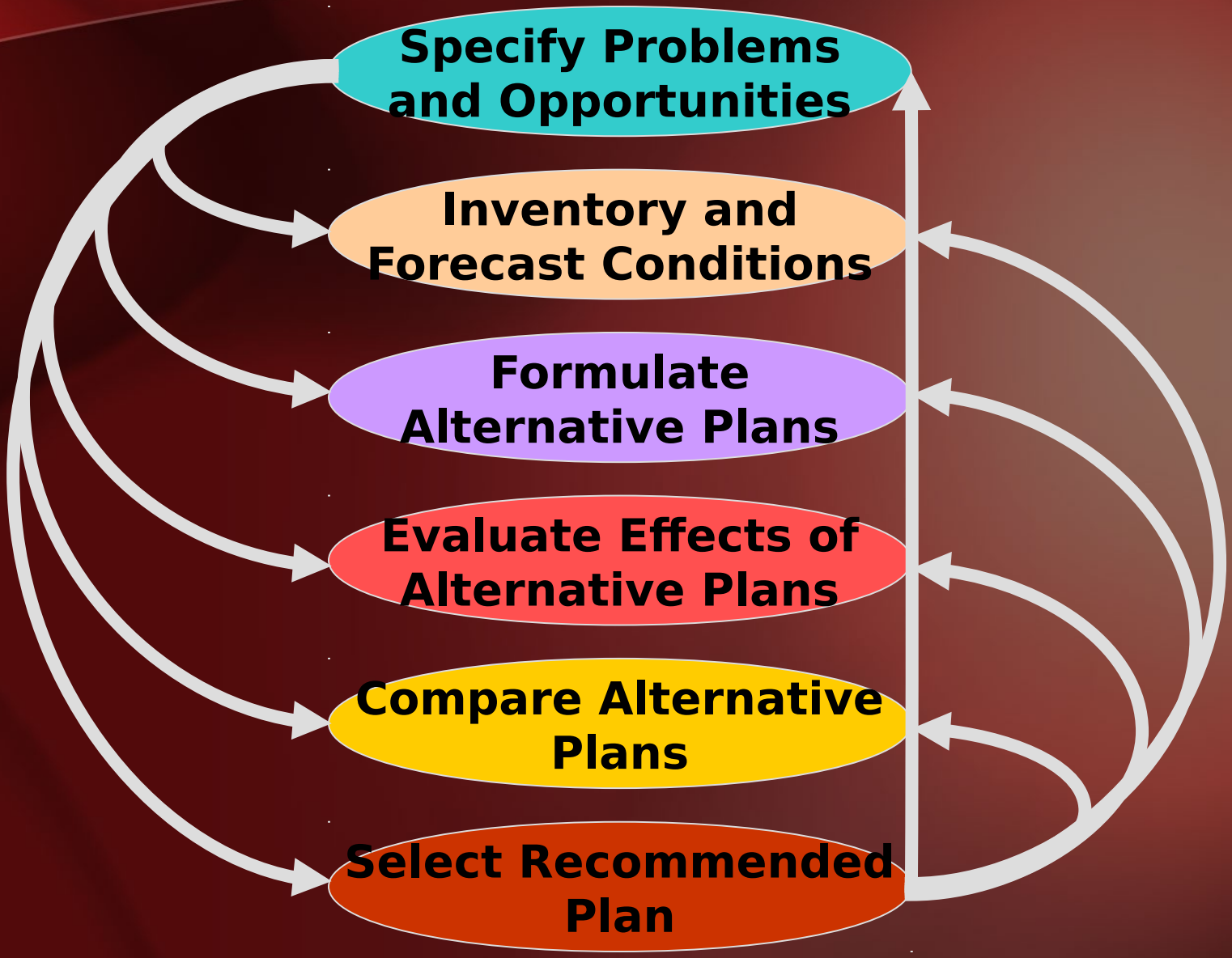
- **“The budget was determined 5 yrs ago for this study and it only allotted 1yr and $100K for the environmental assessment …”**

- **“H&H modeling is done, but no one asked the Habitat Assessment Team for input as to what our needs were for our analysis…”**

Recent Quotes

- **“I’ve got my designs and costs, but where do I find the outputs for IWR-Plan?”**
- **“We’ve always just used acres .”**
- **“It’s January and I have been funded to complete the Habitat Assessment by the end of FY, so where do I start?”**

Planning Process: Iterative



Planning Process: Team

- **Participants**
  - **COE**
  - **USFWS**
  - **State Fish & Wildlife or Natural Resource Agencies**
  - **Native American Tribes**
  - **Sponsors**
  - **Universities**
  - **Private Consultants**

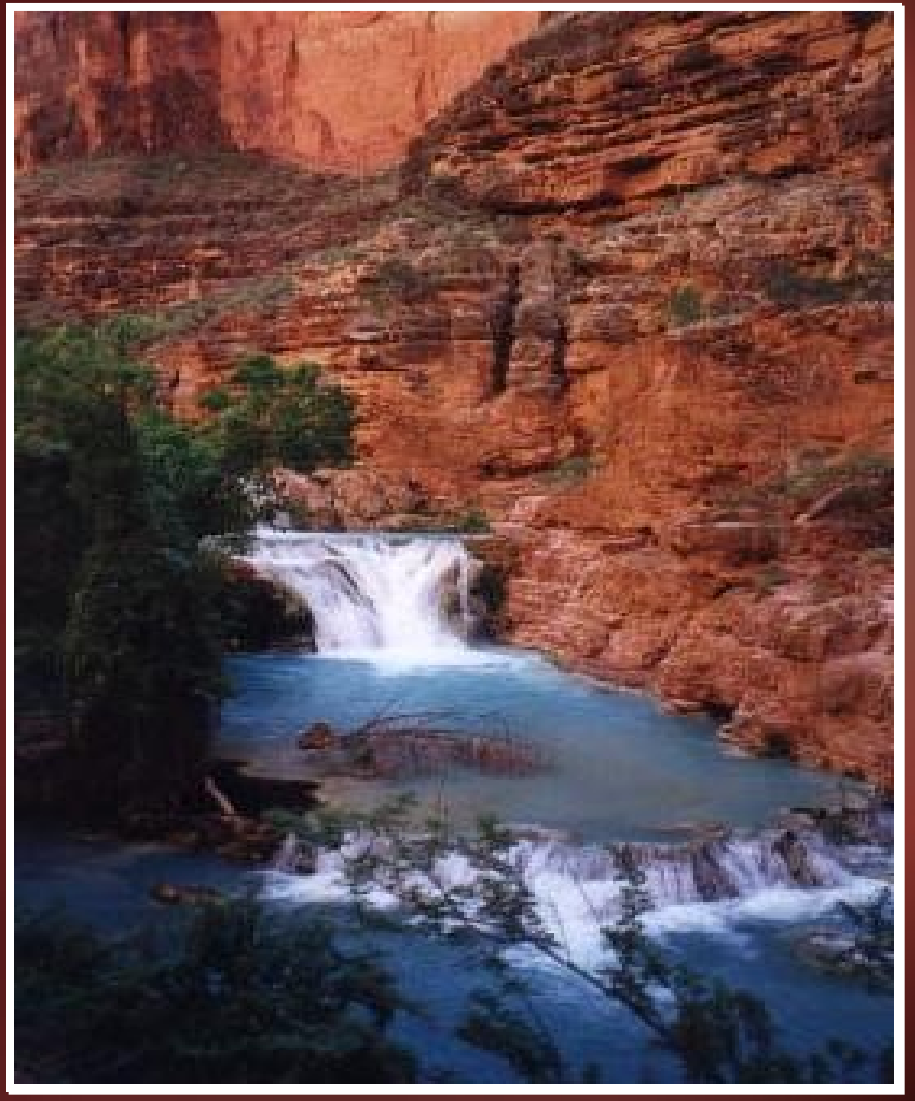
Planning Process: Study Type

- **Ecosystem Restoration**
- **Impacts/Mitigation**
  - **Navigation**
  - **Flood Damage Reduction**
- **Combined NED/NER**

Study Process: H&H vs. Env

PROBLEMS

- **H&H done the 1st yr**
- **Environmental evaluation usually not started until some time in the 2nd yr**
- **GIS work done last, because it's only used for colorful maps in the EIS report**



Study Process: The Big GI's

PROBLEMS

- **Many, many sites to evaluate**
- **Potential for multiple measures**
- **More than one method used**
- **NER vs NED**

offs

Evaluation Process: Methods

PROBLEMS

- **HEP doesn’t work**

Evaluation Process: Objectives

- **Writing Objectives in “News Style”**
- **Objectives may contain:**
  - **who** The Mill Creek Restoration Study
  - **what** will restore 500 acres of riparian forest to a HSI = 0.85
  - **when** over the next 50 years
  - **where** across Adams and White counties along Mill Creek
  - **why** to emulate historic conditions of the system.

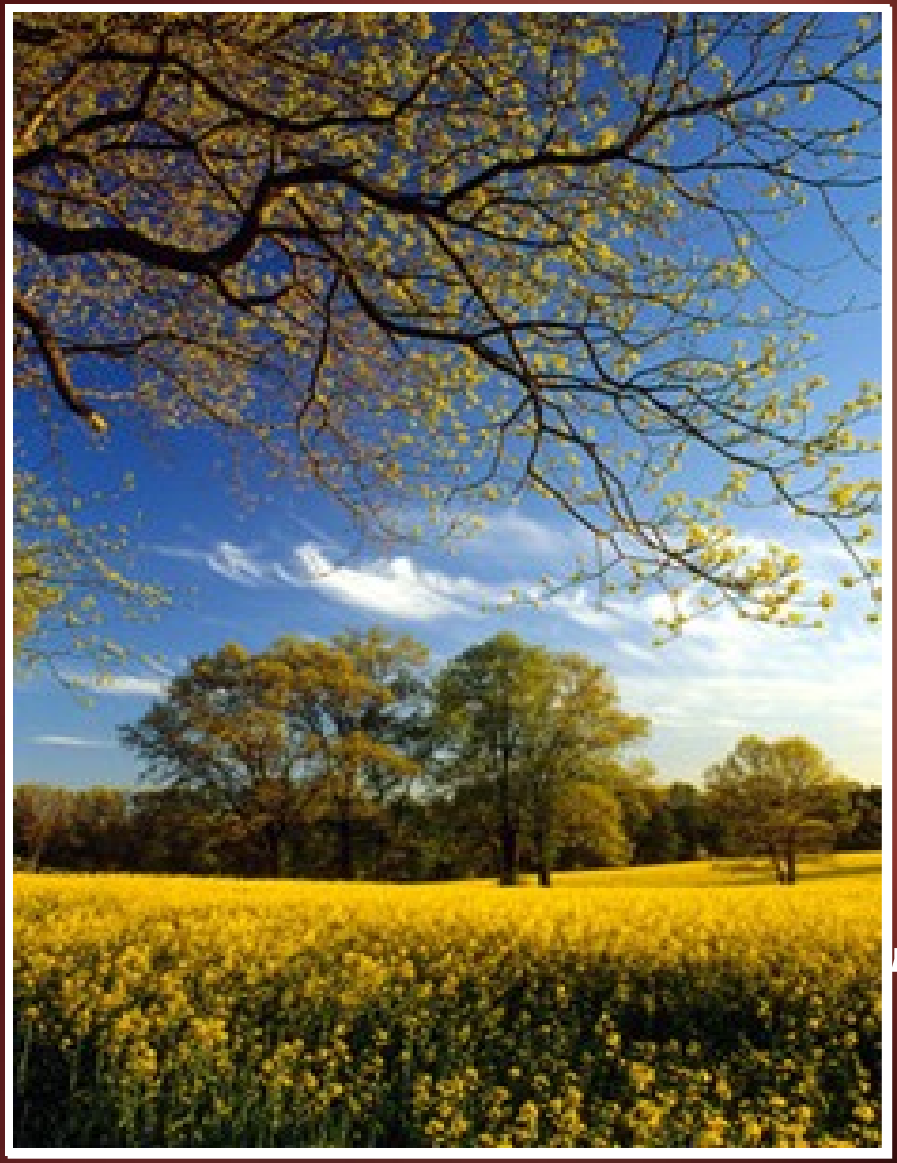
Evaluation Process: Select & Define Cover Types

- **Lumpers vs. Splitters**
- **Existing vs. Newly Developed**
- **Minimum Mapping Scale**

Evaluation Process: Models

PROBLEMS

- **What models are available?**
- **How do I choose models?**



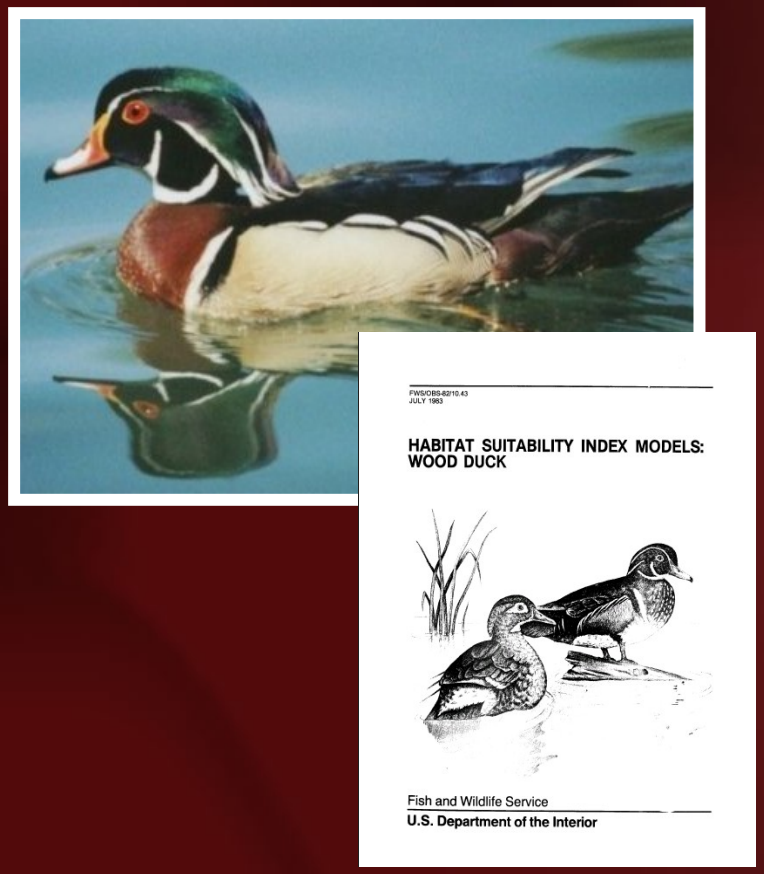
Evaluation Process: Models

PROBLEMS

- **Existing models are inadequate**
- **Model is too complex**
- **No models exist for my study area**

Evaluation Process: Model Development

- **Species**
  - **Habitat Life Requisites**
    - **Food**
    - **Cover**
    - **Water**
    - **Reproduction**



Evaluation Process: Model Development

- **Species**
- **Communities**
  - **Biota**
    - **Structure**
    - **Diversity**
  - **Water**
    - **Hydrology**
    - **Soils**
  - **Landscape**
    - **Spatial scale**
    - **Connectivity**
    - **Human Disturbance**

Evaluation Process: Model Development

- Species
- Communities
- Functions
  - Hydrology
    - Storage
    - Channel Dynamics
  - Biogeochemical
    - Nutrient Cycling
    - Detention of Elements
  - Habitat
    - Wildlife
    - Plants

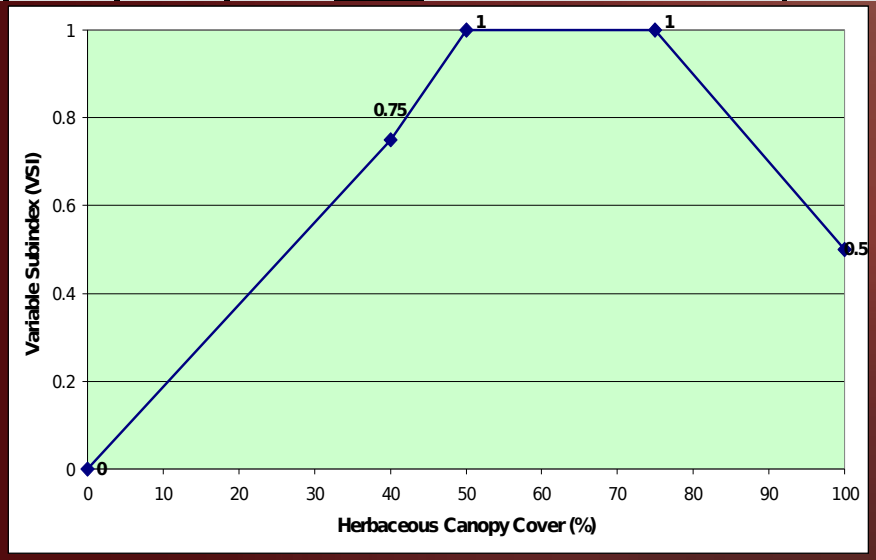
Evaluation Process: Model Development

REFERENCE SITE DATA

SITE NAME	BUFFER	CTW FOR	MESQUITE	RIVERBOTTO	SCRUBSHRU
Hassayampa	NA	25.70	3.55	68.03	8.40
Salt River	NA	2.65	8.50	23.10	3.00
San Pedro	NA	20.53	25.00	33.45	15.05
Tanque Verde	NA	1.65	0.75	0.40	1.55
Tumacacori	NA	9.27	2.00	44.70	
AVERAGE	NA	13.47	8.64	39.00	7.57
AVERAGE ROUNDED	-	13.5	8.6	**39.0**	7.6
MODE	-	-	-	-	-
STDEV	NA	21.0	15.1	**37.0**	15.0
UPPER 90% CONFID	NA	3.01	2.72	5.75	2.89
UPPER 95% CONFID	NA	3.59	3.25	**6.85**	3.44
SAMPLE SIZE	NA	132	83	112	73

RESTORATION SITE DATA

SITE NAME	BUFFER	CTW FOR	MESQUITE	RIVERBOTTO	SCRUBSHRU
Antiguo	NA	3.96	3.10	0.15	1.57
del Norte	NA	4.67	0.17	59.25	1.20
Oeste	NA	1.25	NA	18.77	1.53
Paseo	NA	NA	1.10	NA	4.67
Va Shly Ay	NA	11.54	0.74	33.60	3.73
AVERAGE	NA	4.69	1.20	27.59	2.75
AVERAGE ROUNDED	-	4.7	1.2	27.6	2.7
MODE	-	-	-	-	-
STDEV	NA	14.3	4.3	32.7	7.3
UPPER 90% CONFID	NA	2.46	0.93	5.37	1.05
UPPER 95% CONFID	NA	2.93	1.11	6.40	1.25
SAMPLE SIZE	NA	91	59	100	130



Typical Time Required

Oct-Dec	**Waiting for funding**
Jan-Mar	**Method selection**
	Cover Types defined
	Model selection &/o development
Apr-Jun	**Gather data**
	Baseline analysis
Jul-Sep	**Refine model**

Still to do . . .

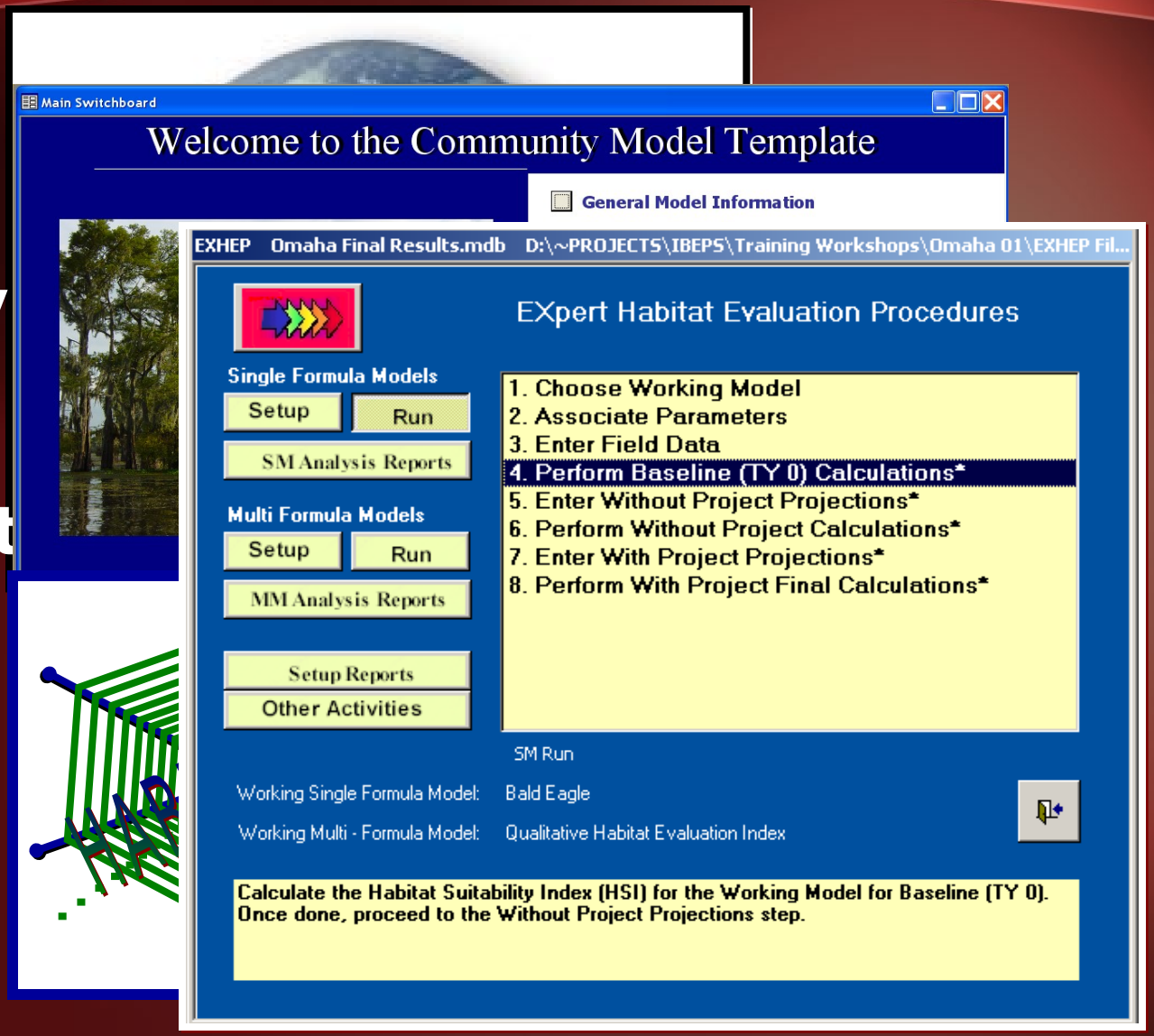
3-6 mos	**Develop Designs**
1-3 mos	**Evaluate Designs**
1-3 mos	**ICA/Trade-offs**
1 mo	**Select Plan**
6 mos	**Write Report**

Reducing the Effort

- **Historical Sampling & GIS databases**
- **Model Selection & Modification**
- **Experienced Team**
- **Representative Scenarios**
- **Life Requisites, Components, Functions of importance**
- **Available Tools**

Reducing the Effort

- EMRIS
- Community Template
- Habitat-Net
- EXHEP/ EXHGM


Main Switchboard
Welcome to the Community Model Template
General Model Information
EXHEP Omaha Final Results.mdb D:\~PROJECTS\IBEPS\Training Workshops\Omaha 01\EXHEP Fil...
EXpert Habitat Evaluation Procedures
Single Formula Models
Setup
Run
SM Analysis Reports
Multi Formula Models
Setup
Run
MM Analysis Reports
Setup Reports
Other Activities
1. Choose Working Model
2. Associate Parameters
3. Enter Field Data
4. Perform Baseline (TY 0) Calculations*
5. Enter Without Project Projections*
6. Perform Without Project Calculations*
7. Enter With Project Projections*
8. Perform With Project Final Calculations*
SM Run
Working Single Formula Model: Bald Eagle
Working Multi - Formula Model: Qualitative Habitat Evaluation Index
Calculate the Habitat Suitability Index (HSI) for the Working Model for Baseline (TY 0).
Once done, proceed to the Without Project Projections step.

http://www.wes.army.mil/el/emrrp/analyt.htm